

Pizza Wheel

Overview:

Students will have fun moving around a number wheel to learn concepts of addition and subtraction.

Outcome:

Students will develop skills adding and subtracting.

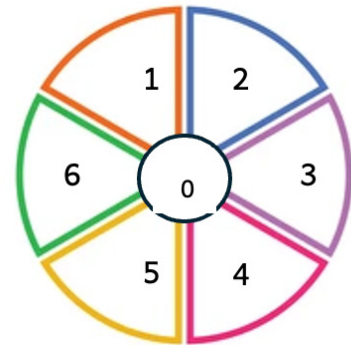
Plan:

- ◆ Draw a large pizza-like shape on a piece of sturdy paper or oak tag. Divide it into six "slices" with a circle in the center. Number the slices 1,2,3,4,5,6 and mark the center as 0.
- ◆ Have students stand around the wheel. Select a student to toss a penny. If the penny lands on an odd number, the students move one step to the left. If the penny lands on an even number, the students move one step to the right. If it lands on zero, they stay still.
- ◆ The next student then tosses the penny. The students have to **add** the number the penny lands on to the previous number. If the total is odd, they move left. If even, they move right.
- ◆ The third student does the same, and again the number the penny lands on is added to the previous sum and the students move left or right if the new sum is odd or even (it's possible that the penny lands on zero several times—and then the students don't move).
- ◆ This is continued until the sum is 20 or more. *At that point, the procedure happens in reverse.* The next student tosses the penny and that number is **subtracted** from the previous total (20 or higher) to get a new value that if odd, the students move left, and if even, the students move right. This is continued until the sum is zero (it ends at zero, not negative numbers)

1ST GRADE MATH

OPERATIONS AND ALGEBRAIC THINKING

Standards: 1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem



Adding Words

1ST GRADE MATH

OPERATIONS AND ALGEBRAIC THINKING

Standards: 1.OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. Drawings need not show details but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)

Overview:

Students will work with the practical uses of addition.

Outcome:

Students will solve addition word problems.

Plan:

- ◆ Have students count the number of desks in the room. Then have them count the number of chairs in the room. Then have them count the number of students in the room. Have them add those three numbers together. Discuss how that number is useful.
- ◆ Discuss the uses of addition, ask them how addition is used. Some possible answers include to count money, to pay bills, to figure out game scores, to know place settings, etc.
- ◆ Now have the students work together to solve the following word problems:
 1. Mr. Roboto needs batteries. He had one. Mrs. Roboto gives him two more. How many batteries does Mr. Roboto have now? (3)
 2. In Joey's house there are many TVs. There's one in the kitchen, two in the living room, and one in his parents' bedroom. How many TVs are there in Joey's house? (4)
 3. There are several houses in Electro City without electric power. There are four houses on Neutron Street, two houses on Positron Avenue, and one house on Semi-Conductor Circle that have no power. How many houses in Electro City need electric power? (7)
 4. Sparky has a lot of work to do in Kathy's house. Kathy has turned on four computers, four TVs, and one microwave. How many appliances does Sparky need to charge? (9)
 5. Mr. Roboto landed his spaceship on the moon but far from the moon station. He had to drive his moon car five miles but ran out of power. He recharged and drove another ten miles, but the car broke down. He walked the rest of the way, another five miles. How many miles away did Mr. Roboto's spaceship land from the moon station? (20)
- ◆ Have the students illustrate word problem 5.



Subtracting Words

1ST GRADE MATH

OPERATIONS AND ALGEBRAIC THINKING

Standards: 1.OA.4 Understand subtraction as an unknown-addend problem. For example, subtract $10 - 8$ by finding the number that makes 10 when added to 8.

Overview:

Students will work with the practical uses of subtraction.

Outcome:

Students will solve subtraction word problems.

Plan:

- ◆ Discuss the uses of subtraction. For example, if you want to share batteries from a pack of four and still have one for yourself, you can give away (or subtract) as many as three.
- ◆ Now have students work together to solve the following word problems:
 1. Mr. Roboto has too many batteries. He had five! He gives Mrs. Roboto two batteries How many batteries does Mr. Roboto have now? (3)
 2. In Joey's house there are three TVs. There's one in the kitchen and two in the living room. His parents sell one from the living room. How many TVs are there now in Joey's house? (2)
 3. During a blackout, seven houses in Electro City lost electric power. Sparky restored power to four of them. How many houses still need electric power? (3)
 4. Kathy turned on four computers and four TVs in her house at the same time. The power almost went out. She had to unplug half of her appliances. How many appliances still have power? (4)
 5. Mr. Roboto landed his spaceship on the moon but twenty miles from the moon station. He only had enough power to drive his moon car fifteen miles. How many miles does Mr. Roboto have to walk to get to the moon station? (5)
- ◆ Have the students illustrate word problem 5.



Sparky's Power Word

Overview:

Students will work with addition and subtraction.

Outcome:

Students will apply adding and subtracting skills to solve a fun word problem.

Plan:

- ◆ Copy and distribute the worksheet.
Explain to students that they have to use addition on the left-hand column, and they have to use subtraction on the right-hand column. Then, they can use those numbers to find the letters that will fill in the boxes below and reveal Sparky's power word.

1ST GRADE MATH

OPERATIONS AND ALGEBRAIC THINKING

Standards: 1.OA.6 Add and subtract within 20, demonstrating fluency with various strategies for addition and subtraction within 10. Strategies may include counting on; making ten, e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$; decomposing a number leading to a ten, e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$; using the relationship between addition and subtraction, e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$; and creating equivalent but easier or known sums, e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$.

Sparky's Power Word

Add the numbers / Subtract the numbers
Write the answers in the boxes

3+5=	8	a		20-3=	17	e
3+1=	4	c		13-4=	9	r
5+1=	6	h		15-2=	13	g

Once you do all the adding and subtracting,
write the letters that match the numbers in the
boxes.

4	6	8	9	13	17
c	h	a	r	g	e



Pluses and Minuses

Overview:

Students use subtraction and addition to switch breakers on and off.

Outcome:

Students will apply adding and subtracting skills to real world problems.

Plan:

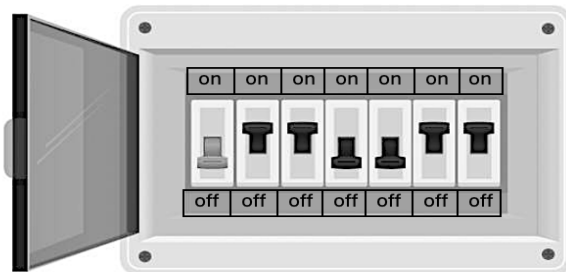
- ◆ Copy and distribute the worksheet. Explain that students must switch an off breaker to the on position by adding numbers to get to 10, as in $5+5=10$. To switch an on breaker to the off position, they can subtract numbers from 10, as in $10-7=3$. (No repeat equations.)

1ST GRADE MATH

OPERATIONS AND ALGEBRAIC THINKING

Standards: 1.OA.7 Understand the meaning of the equal sign and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? $6 = 6$; $7 = 8 - 1$; $5 + 2 = 2 + 5$; $4 + 1 = 5 + 2$.

Switch the off breakers to on, add two numbers to get to 10.
To switch the off breakers to on, subtract a number from 10.
Write the equations below.



1st Breaker:

2nd Breaker:

3rd Breaker:

4th Breaker:

5th Breaker:

6th Breaker:

Possible answers:

1st Breaker (off to on): $5+5=10$, $8+2=10$, $6+4=10$, etc.

2nd Breaker (on to off): $10-3=7$, $10-8=2$, $10-1=9$, etc.



Atomic Numbers

Overview:

Students will have fun learning about the atomic numbers.

Outcome:

Students will be introduced to atomic numbers while using subtraction and addition skills.

Plan:

- ◆ Explain that all elements have an atomic number equal to the number of its electrons. For example, Hydrogen has an atomic number of one because it has one electron.
- ◆ Copy and distribute the worksheet. Ask students to add and subtract in each ball to find its atomic number and then match that number to the guide below to find the element.

1ST GRADE MATH

OPERATIONS AND ALGEBRAIC THINKING

Standards: 1.OA.8 Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations: $8 + \square = 11$; $5 \square = -3$; $6 + 6 = \square$.

Find the Atomic Number for each element by completing the equations.

$$8+3=$$

Element _____

$$20-13=$$

Element _____

$$12+8=$$

Element _____

$$17-15=$$

Element _____

$$7+7=$$

Element _____

$$8+0=$$

Element _____

$$12+5=$$

Element _____

$$19-13=$$

Element _____

$$18+8=$$

Element _____

Here are the elements and their atomic numbers: Helium—2, Carbon—6, Nitrogen—7, Oxygen—8, Sodium—11, Silicon—14, Chlorine—17, Calcium—20, Iron—26.



Missing Face

Overview:

In this fun activity, students get to color in Sparky's face by filling in the number grid.

Outcome:

Students will practice filling out the number grid to 120.

Plan:

- ◆ Copy and distribute this worksheet for students to find the missing numbers and color in Sparky's face. Explain that the students must fill in the empty boxes with the correct numbers. Use the guide to color the squares and reveal Sparky's face.

1ST GRADE MATH

NUMBER AND OPERATIONS
IN BASE TEN

Standards: 1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

Fill in the blank boxes with the correct numbers.

1	2	3	4	5	6	7	8	9	10
11	12	13						19	20
21	22							29	30
31	32			35	36			39	40
41	42			45	46			49	50
51	52	53	54			57	58	59	60
61		63	64			67	68		70
71	72		74	75	76	77		79	80
81	82	83					88	89	90
91	92							99	100
101	102	103					108	109	110
111	112	113	114	115	116	117	118	119	120

Guide to coloring in Sparky's face.

- After 13-Before 18–red
- After 22-Before 29–green
- After 32-Before 35–blue
- After 36-Before 39–blue



Missing Face

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Plan:

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1ST GRADE MATH

NUMBER AND OPERATIONS
IN BASE TEN

Standards: 1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

Fill in the blank boxes with the correct numbers.

1	2	3	4	5	6	7	8	9	10
11	12	13						19	20
21	22							29	30
31	32			35	36			39	40
41	42			45	46			49	50
51	52	53	54			57	58	59	60
61		63	64			67	68		70
71	72		74	75	76	77		79	80
81	82	83					88	89	90
91	92							99	100
101	102	103					108	109	110
111	112	113	114	115	116	117	118	119	120

The correctly filled in number grid with Sparky's face.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

Guide to coloring in Sparky's face.

After 13-Before 18–red
After 22-Before 29–green
After 32-Before 35–blue
After 36-Before 39–blue
After 42-Before 45–blue
After 46-Before 49–blue
After 54-Before 57–pink

After 61-Before 63–yellow
After 64-Before 67–pink
After 68-Before 70–yellow
After 72-Before 74–yellow
After 77-Before 79–yellow
After 92-Before 99–green
After 103-Before 108–red

Place Race

Overview:

In this fun activity, students participate in a race while learning about place value.

Outcome:

Students understand that two-digit numbers represent two place values, 10s and 1s.

Plan:

- ◆ Students line up in two rows. The first row is the **10s Place**. The second row is the **1s Place**. A student (or the teacher) calls out two-digit numbers. Students in each row take the number of steps equal to the place value of the number. For example, if the number is 34, the student in the **10s Place** takes 3 steps, and the student in the **1s Place** takes 4 steps. The object is for both students to reach the end of the race at the same time.

Optional: a student could keep a running tally of the two-digit numbers.

1ST GRADE MATH

NUMBER AND OPERATIONS IN BASE TEN

Standards: 1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: 10 can be thought of as a bundle of ten ones – called a “ten;” the numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones; and the numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).



Compare Batteries

Overview:

Students will learn how to compare values using symbols.

Outcome:

Students will use the less than, equals, and greater than symbols ($<$, $=$, $>$) to compare values.

Plan:

- ◆ Copy and distribute the worksheet and explain how the value symbols work.

$X > Y$ means that X is "greater than" Y, it is a larger number.

$X < Y$ means that X is "lesser than" Y, it is a smaller number.

$X = Y$ means that X and Y have the same value.

1ST GRADE MATH

NUMBER AND OPERATIONS IN BASE TEN

Standards: 1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.

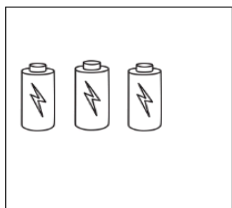
Batteries!

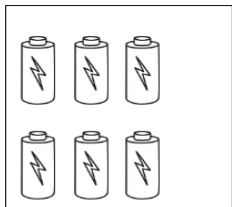
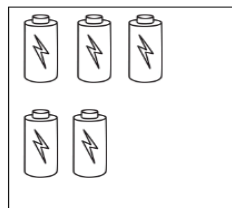
Count the batteries in each power pack. Write $<$ or $>$ or $=$ to compare the values of each battery pack.

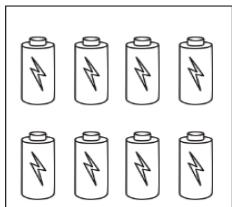
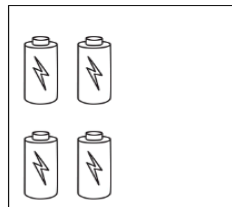
$<$ means **less than**

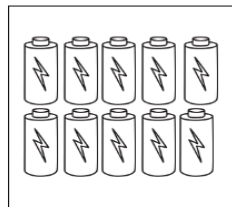
$>$ means **greater than**

$=$ means **equal**









Atomic Number Fact Families

Overview:

Students will use word problems to fill in fact family triangles and use them to find addition and subtraction relationships.

Outcome:

Students will use solve missing addend problems in addition and subtraction using mental math and fact family triangles.

Plan:

- ◆ For this activity, students will have to find three numbers to start:
 1. Student age
 2. The solution to the word problem below.
 3. The result of the first number added to the second number.
- ◆ Have students fold and cut blank pieces of paper into triangles. They will be writing three numbers into a triangle (left angle, right angle, top angle).

Left angle: In the first corner, have the students write their age. _____

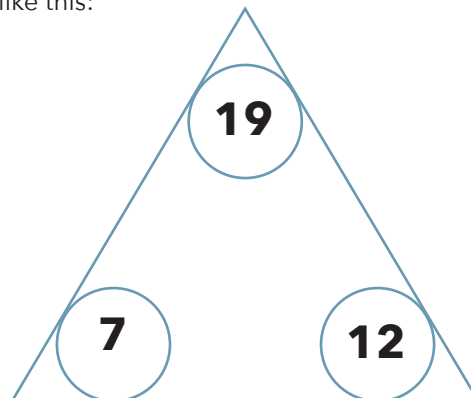
Right angle: Have the students solve this word problem:

Add the number of letters in your first name and the number of letters in your last name.

(first name number of letters) ____ + ____ (last name number of letters) = _____

Top angle: Add the number in the left angle to the number in the right angle = _____

The triangle might look like this:



1ST GRADE MATH

NUMBER AND OPERATIONS IN BASE TEN

Standards: 1.NBT.4 Add within 100, including adding a two-digit number and a one-digit number and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; record the strategy with a written numerical method (drawings and, when appropriate, equations) and explain the reasoning used. Understand that when adding two-digit numbers, tens are added to tens; ones are added to ones; and sometimes it is necessary to compose a ten.

- ◆ Once students have their fact family triangle, ask them to identify the largest number (19) and that by adding the left number (7) to the right number (12) they know two facts: $7+12=19$ and $12+7=19$. By using manipulatives, if necessary, show that the students know two more facts, $19-7=12$ and $19-12=7$.
- ◆ Bonus: Have students compare the numbers in their triangle to the atomic numbers of the elements. (In the above example, 19 is Potassium, 12 is Magnesium, and 7 is Nitrogen).

Elements: Names, Symbols & Atomic Numbers			
1 H Hydrogen	31 Ga Gallium	61 Pm Promethium	91 Pa Protactinium
2 He Helium	32 Ge Germanium	62 Sm Samarium	92 U Uranium
3 Li Lithium	33 As Arsenic	63 Eu Europium	93 Np Neptunium
4 Be Beryllium	34 Se Selenium	64 Gd Gadolinium	94 Pu Plutonium
5 B Boron	35 Br Bromine	65 Tb Terbium	95 Am Americium
6 C Carbon	36 Kr Krypton	66 Dy Dysprosium	96 Cm Curium
7 N Nitrogen	37 Rb Rubidium	67 Ho Holmium	97 Bk Berkelium
8 O Oxygen	38 Sr Strontium	68 Er Erbium	98 Cf Californium
9 F Fluorine	39 Y Yttrium	69 Tm Thulium	99 Es Einsteinium
10 Ne Neon	40 Zr Zirconium	70 Yb Ytterbium	100 Fm Fermium
11 Na Sodium	41 Nb Niobium	71 Lu Lutetium	101 Md Mendelevium
12 Mg Magnesium	42 Mo Molybdenum	72 Hf Hafnium	102 No Nobelium
13 Al Aluminium	43 Tc Technetium	73 Ta Tantalum	103 Lr Lawrencium
14 Si Silicon	44 Ru Ruthenium	74 W Tungsten	104 Rf Rutherfordium
15 P Phosphorus	45 Rh Rhodium	75 Re Rhenium	105 Db Dubnium
16 S Sulfur	46 Pd Palladium	76 Os Osmium	106 Sg Seaborgium
17 Cl Chlorine	47 Ag Silver	77 Ir Iridium	107 Bh Bohrium
18 Ar Argon	48 Cd Cadmium	78 Pt Platinum	108 Hs Hassium
19 K Potassium	49 In Indium	79 Au Gold	109 Mt Meitnerium
20 Ca Calcium	50 Sn Tin	80 Hg Mercury	110 Ds Darmstadtium
21 Sc Scandium	51 Sb Antimony	81 Tl Thallium	111 Rg Roentgenium
22 Ti Titanium	52 Te Tellurium	82 Pb Lead	112 Cn Copernicium
23 V Vanadium	53 I Iodine	83 Bi Bismuth	113 Nh Nihonium
24 Cr Chromium	54 Xe Xenon	84 Po Polonium	114 Fl Flerovium
25 Mn Manganese	55 Cs Caesium	85 At Astatine	115 Mc Moscovium
26 Fe Iron	56 Ba Barium	86 Rn Radon	116 Lv Livermorium
27 Co Cobalt	57 La Lanthanum	87 Fr Francium	117 Ts Tennessine
28 Ni Nickel	58 Ce Cerium	88 Ra Radium	118 Og Oganesson
29 Cu Copper	59 Pr Praseodymium	89 Ac Actinium	
30 Zn Zinc	60 Nd Neodymium	90 Th Thorium	

Mohammad Shahi

Subtraction Surge

Overview:

Students will reset a gauge after a power surge.

Outcome:

Students will use subtract by tens in a number line.

Plan:

- ◆ Copy and distribute the worksheet. Explain how the number line works and that students have to turn back the power by tens because it's in the red zone and has to return to normal.

1ST GRADE MATH

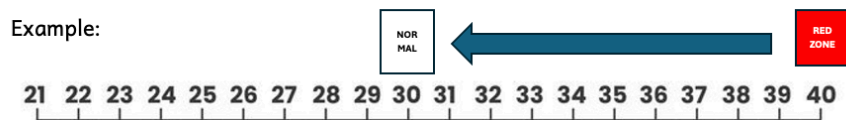
NUMBER AND OPERATIONS IN BASE TEN

Standards: 1.NBT.6 Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that when adding two-digit numbers, tens are added to tens; ones are added to ones; and sometimes it is necessary to compose a ten.

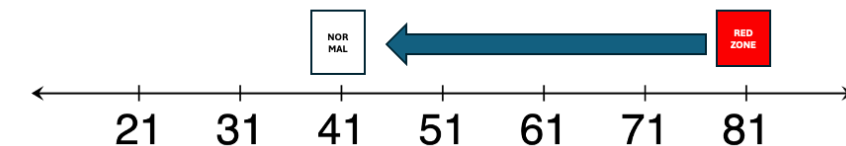
Subtraction Surge

Turn down the power! After the power surges into the RED ZONE on the number line below, use a colored crayon to draw a line back to the NORMAL setting. Then use the boxes to write the equation that matches the action of the number line.

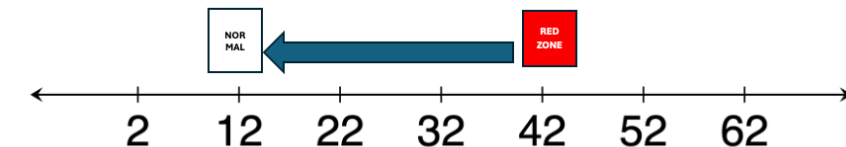
Example:



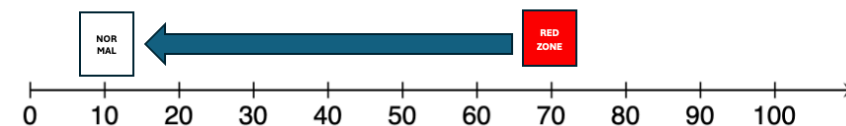
$$\underline{\quad\quad} - \underline{\quad\quad} = \underline{\quad\quad} \quad (40-10=30)$$



$$\underline{\quad\quad} - \underline{\quad\quad} = \underline{\quad\quad} \quad (81-40=41)$$



$$\underline{\quad\quad} - \underline{\quad\quad} = \underline{\quad\quad} \quad (42-30=12)$$



$$\underline{\quad\quad} - \underline{\quad\quad} = \underline{\quad\quad} \quad (70-60=10)$$



More Wire

1ST GRADE MATH

MEASUREMENT AND DATA

Standards: 1.MD.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.

Overview:

Students will measure the walls in class to figure out how long of an extension cord they need.

Outcome:

Students will a tape measure or ruler to find the distances between a plug and a device.

Plan:

- ◆ Choose a wall outlet (making sure it is protected) on the other side of the room from a lamp or other electric device.
- ◆ Tell the students that they must use a flexible tape measure (made of cloth if possible) to measure the distances from the wall outlet to the electric device. Show the students how inches re marked on the ruler.
- ◆ The students should come up with three different numbers. One number would be the measurement in inches of the outlet to the device going left. Another number would be the result of that measurement going right. The third number would be the result of measuring the distance diagonally across the room.

Number of inches between the outlet and the device:

Going left the number is _____

Going right the number is _____

Going diagonal the number is _____



Two Ways to Tell Time

1ST GRADE MATH

MEASUREMENT AND DATA

Standards: 1.MD.3 Work with time and money. a. Tell and write time in hours and half-hours using analog and digital clocks.

Overview:











Students will practice telling time in two different ways, from analog and digital clocks.

Outcome:

Students will convert time measurement between digital and analog.

Plan:

- ◆ Copy and distribute the worksheet.
- ◆ Explain that the clocks on the left are analog clocks with 12 hours on the face. Remind them that the big hand tells us the hour number and the smaller hand tells us the minute number.
- ◆ Then show the students the clocks on the right. They are digital and also measure 12 hours at a time, but by displaying the numerals that make up the hour and minute.
- ◆ Have the students convert the analog time to digital and the digital time to analog.

A.		_____	
B.		_____	
C.		_____	
D.		_____	
E.		_____	

Screen Graph

Overview:

Students will have fun using a graph to track screen time.

Outcome:

Students will collect data and see the results on a simple graph.

Plan:

- ◆ Have the students work in groups or all together. Ask each student to guess how many hours they spend on screens (TV or computer or phone, etc.) on a typical non-school day (Saturday or Sunday).
- ◆ Explain that each student and that number (hours on screens) represent data points.
- ◆ Have the students work with graph paper to plot the data points. The X axis (horizontal) will be made up of the students' names (or codes if this is more comfortable). The Y axis (vertical) will mark the hours.

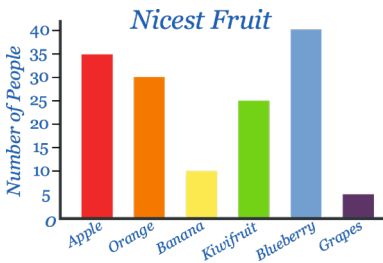
1ST GRADE MATH

MEASUREMENT AND DATA

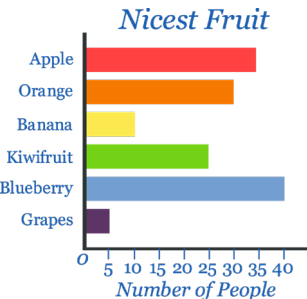
Standards: 1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Students can also use different types of graphs, such as two types of bar graphs, vertical and horizontal.

Sample of vertical bar graph.



Sample of horizontal bar graph.



The graph will look something like this:

8 hours											
7 hours											
6 hours											
5 hours											
4 hours											
3 hours											
2 hours											
1 hours											
0 hours											
	Student A	Student B	Student C	Student D	Student E	Student F	Student G	Student H	Student I	Student J	Student K



Sparky Shapes

Overview:

Students will identify two and three dimensional objects among various geometric solids.

Outcome:

Students will color code two and three dimensional objects.

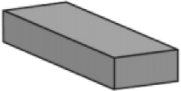
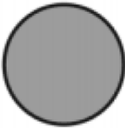
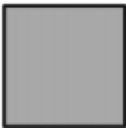


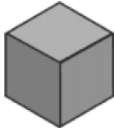



Plan:

- ◆ Copy and distribute the worksheet. Have students identify the geometric shapes. Then have them color the two dimensional shapes red and the three dimensional shapes blue

1ST GRADE MATH

GEOMETRY

Standards: 1.G.1 Distinguish between defining attributes, e.g., triangles are closed and three-sided, versus non-defining attributes, e.g., color, orientation, overall size; build and draw shapes that possess defining attributes.

 _____	 _____	 _____
 _____	 _____	 _____
 _____	 _____	 _____

